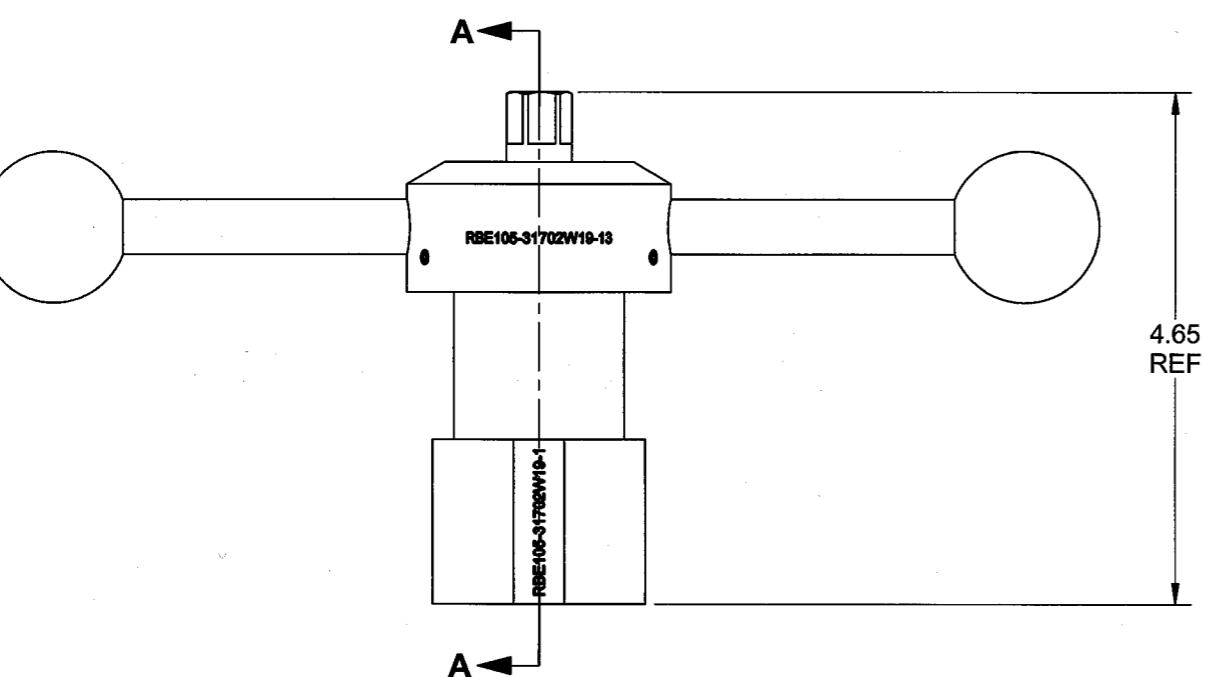
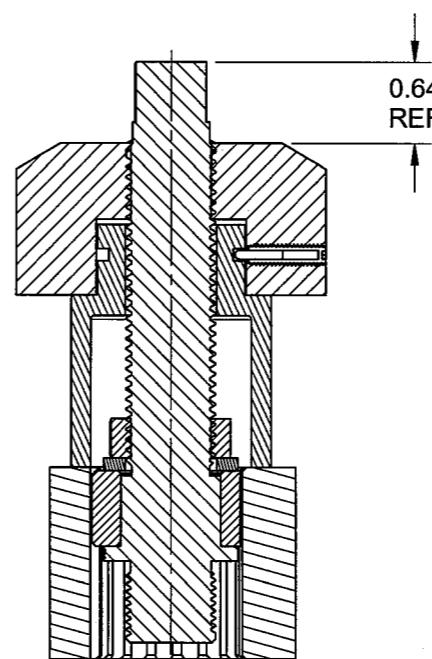
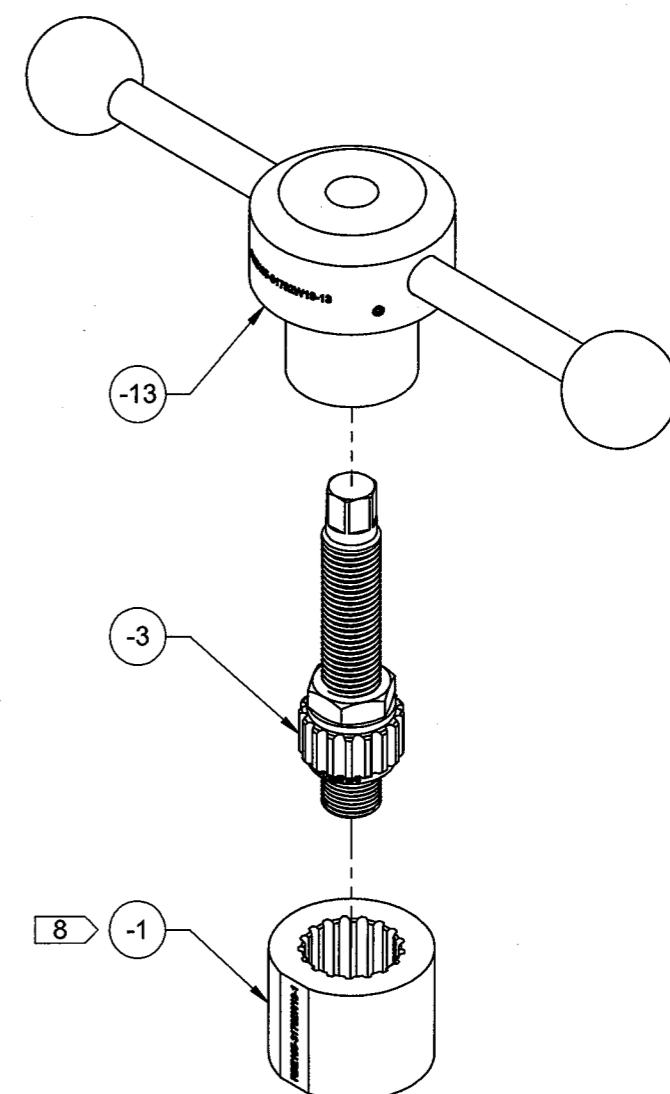


ITEM #	QTY	PART #	PART TITLE
-1	1	RBE105-31702W19-1	INTERNAL GEAR
-3	1	RBE105-31702W19-3	SPLINE SHAFT
-13	1	RBE105-31702W19-13	HANDLE ASSEMBLY

D

RBE105-31702W19 MOUNTING TOOL

9

SECTION A-A

B

## NOTES:

1) MATERIAL: N/A

2) HEAT TREAT: N/A

3) FINISH:

4) TOLERANCES: X.X = +/- 0.1" / +/- 1°  
X.XX = +/- 0.01" / +/- 0.5°  
X.XXX = +/- 0.005" / +/- 0.1°  
X.XXXX = +/- 0.0005" / +/- 0.05°

PARALLELISM, ECCENTRICITY AND SYMMETRY ABOUT ALL CENTER LINES = +/- 0.005"

5) UNITS: INCHES UNLESS OTHERWISE NOTED

6) IDENTIFICATION: N/A

7) ASSEMBLE AS SHOWN

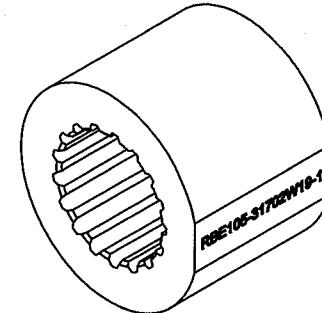
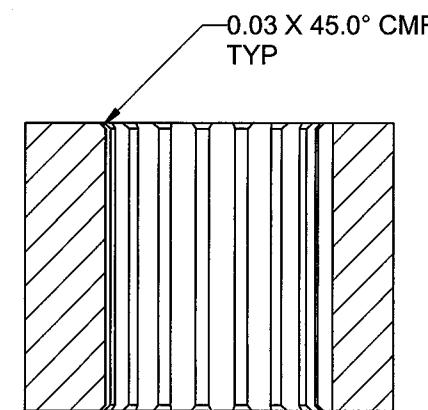
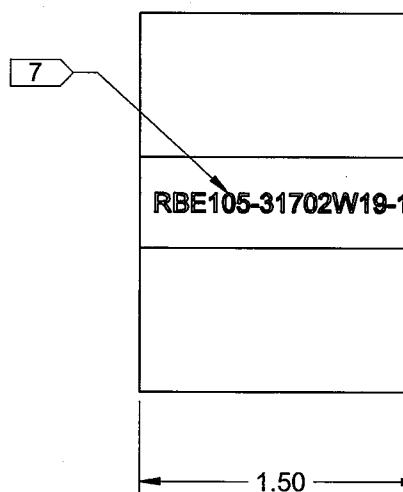
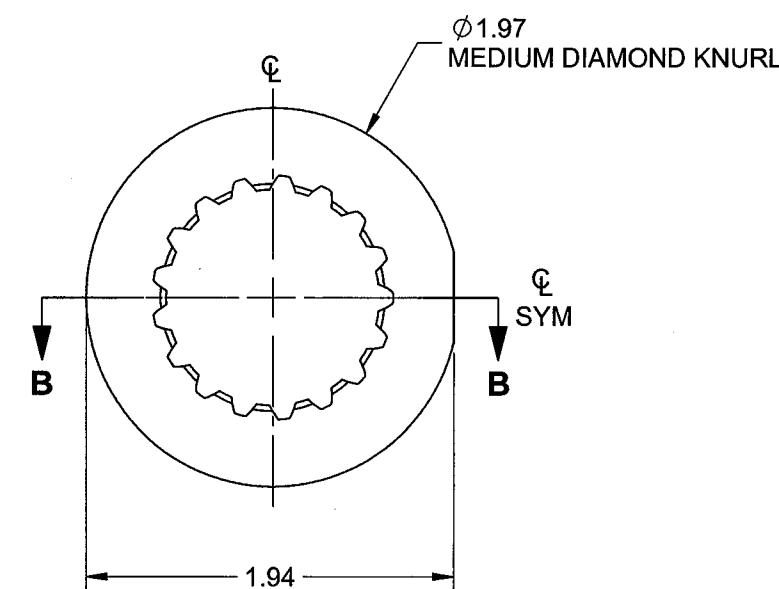
8) SPLINE OF ITEM -1 MUST SLIDE EASILY ALONG SPLINE OF ITEM -3

9) THE TOOL ASSY MUST BE PACKAGED WITH A DESICCANT BAG INTO A TIGHT FITTING SEALED PLASTIC BAG

C	UPDATED DRAWING TEMPLATE ITEM 18 McMaster#8495A37 OR EQUIV. WAS ITEM -19 MCMASTER-CARR #91292A441 (MODIFIED) ITEM 19 WAS ITEM -21 SEE CAR 19-350 FOR DETAILED EXPLANATIONS OF CHANGES MADE	19-113	KPT
REV.	DESCRIPTION	ECN #	BY
DESIGN	KPT		DART AEROSPACE LTD
DRAWN	KPT		HAWKSLEY, ONTARIO, CANADA
CHECKED	PM		REV. C
MFG. APPR.	DP		TOOL PART #
APPROVED	<i>W.P.</i>		RBE105-31702W19
DATE	2019-11-20		SHEET 1 OF 10
TITLE	SCALE		MOUNTING TOOL
	NTS		COPYRIGHT © 2019 BY DART AEROSPACE LTD THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD.

**HUB DIN 5480 - N32 X 1.75 X 17 X 8H**

NUMBER OF TEETH	17
MODULE	1.75
PRESSURE ANGLE	30°
TIP DIAMETER	[28.50-28.63]
ROOT FORM CIRCLE DIAMETER	[31.72] MIN
ROOT DIAMETER	[32.00-32.47]
MAX ACTUAL SPACE WIDTH	[2.987]
MIN ACTUAL SPACE WIDTH	[2.955] REF
MIN EFFECTIVE SPACE WIDTH	[2.937]
MEASURING CIRCLE DIAMETER	[3.000]
MAX DIMENSION OVER MEASURING CIRCLES	[25.760]
MIN DIMENSION OVER MEASURING CIRCLES	[25.699] REF

**SECTION B-B****RBE105-31702W19-1 INTERNAL GEAR**

8

**NOTES:**

- 1) MATERIAL: 4140 (28-32 RC)
- 2) HEAT TREAT: N/A
- 3) FINISH: BLACK OXIDE PER MIL-C-13924 CLASS 1 THEN APPLY A THIN LAYER OF OIL / CPC PER MIL-PRF-16173 GRADE 3 CLASS 1 OR MIL-C-81309 TYPE III OR MIL-C-23411A OR MIL-PRF-81309 AND WIPE OFF EXCESS
- 4) TOLERANCES: X.X = +/- 0.1" / +/- 1°  
X.XX = +/- 0.01" / +/- 0.5°  
X.XXX = +/- 0.005" / +/- 0.1°  
X.XXXX = +/- 0.0005" / +/- 0.05°

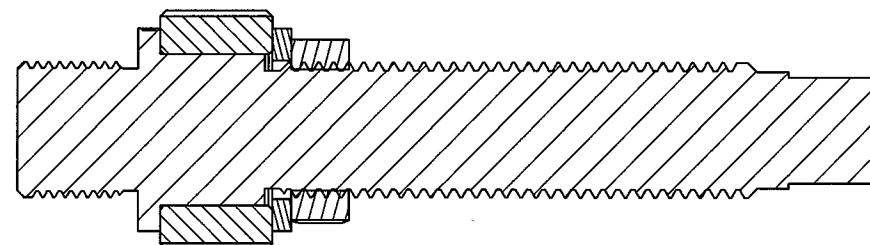
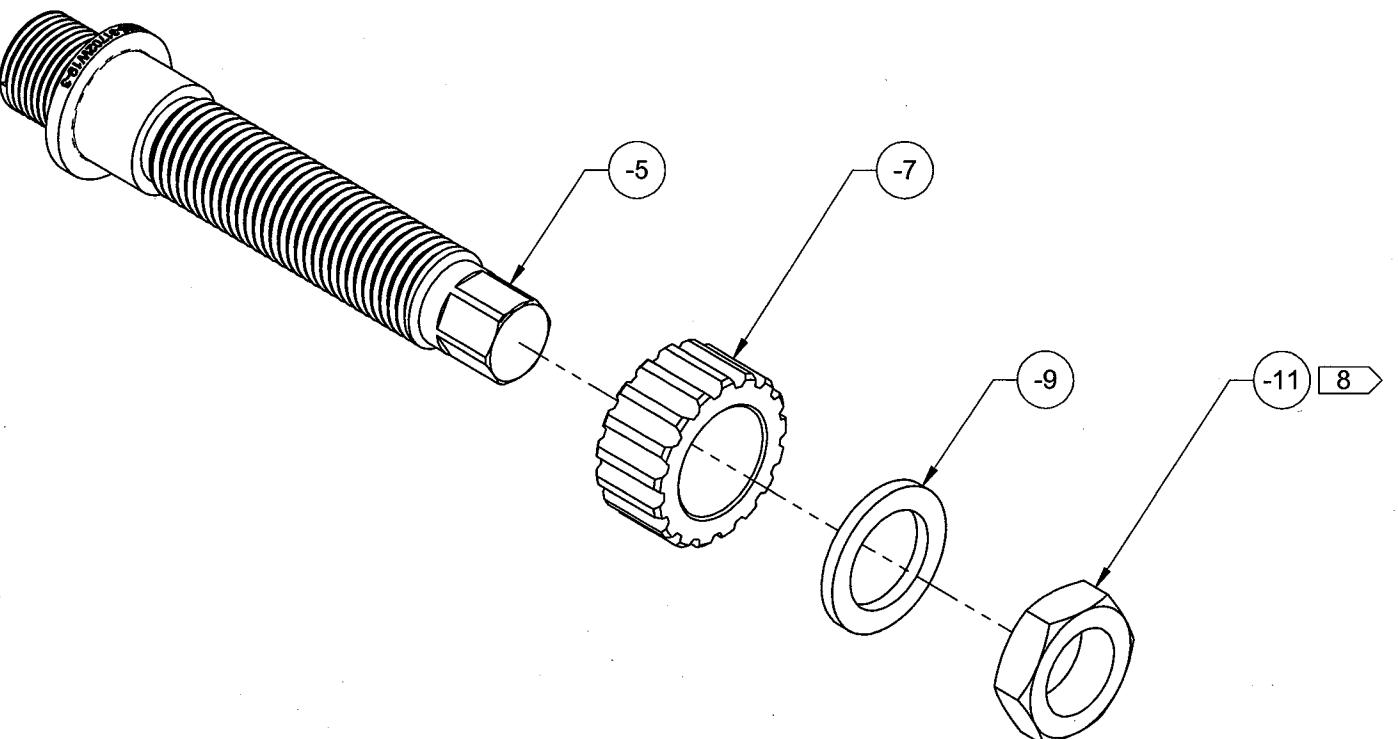
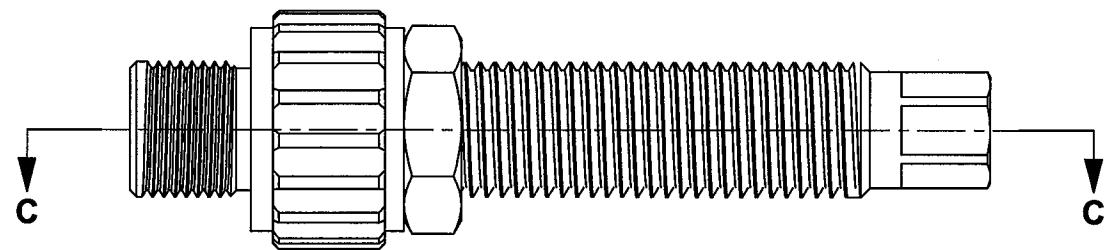
PARALLELISM, ECCENTRICITY AND SYMMETRY ABOUT ALL CENTER LINES = +/-0.005"

- 5) UNITS: INCHES UNLESS OTHERWISE NOTED
- 6) REMOVE ALL SHARP EDGES AND BURRS
- 7) IDENTIFICATION: MACHINE ENGRAVE OR DOT MARK P/N, "RBE105-31702W19-1", AS SHOWN
- 8) SPLINE MUST SLIDE EASILY ALONG SPLINE OF ITEM -7

DESIGN	KPT	<b>DART AEROSPACE LTD</b>	
DRAWN	KPT	HAWKESBURY, ONTARIO, CANADA	
CHECKED	PM	TOOL PART #	REV. C
MFG. APPR.	DP	RBE105-31702W19	SHEET 2 OF 10
APPROVED	<i>[Signature]</i>	TITLE	
DATE 2019-11-20		MOUNTING TOOL	
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ITEM #	QTY	PART #	PART TITLE
-5	1	RBE105-31702W19-5	SHAFT
-7	1	RBE105-31702W19-7	EXTERNAL GEAR
-9	1	RBE105-31702W19-9	WASHER
-11	1	RBE105-31702W19-11	NUT

D

**SECTION C-C****RBE105-31702W19-3 SPLINE SHAFT****NOTES:**

- 1) MATERIAL: N/A
- 2) HEAT TREAT: N/A
- 3) FINISH:
- 4) TOLERANCES: X.X = +/- 0.1" / +/- 1°  
X.XX = +/- 0.01" / +/- 0.5°  
X.XXX = +/- 0.005" / +/- 0.1°  
X.XXXX = +/- 0.0005" / +/- 0.05°  
PARALLELISM, ECCENTRICITY AND SYMMETRY ABOUT ALL CENTER LINES = +/-0.005"
- 5) UNITS: INCHES UNLESS OTHERWISE NOTED
- 6) IDENTIFICATION: N/A
- 7) ASSEMBLE AS SHOWN
- 8) INSTALL ITEM -11 HAND TIGHT

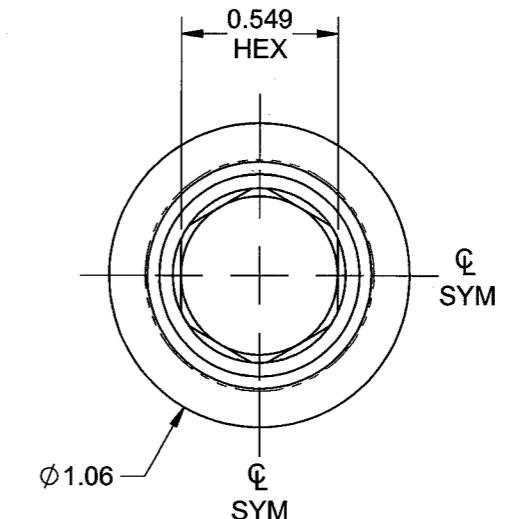
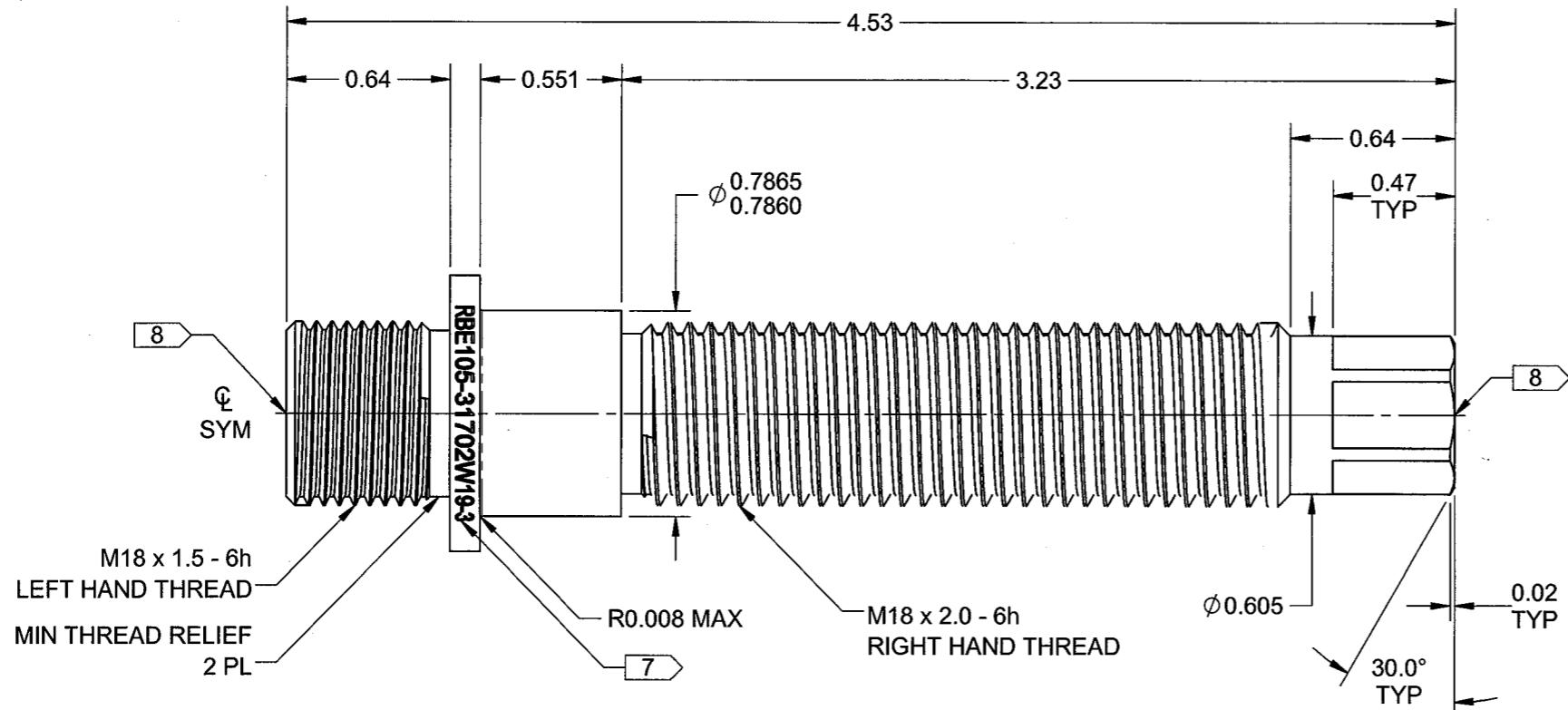
DESIGN	KPT	<b>DART AEROSPACE LTD</b> HAWKESBURY, ONTARIO, CANADA	
DRAWN	KPT		
CHECKED	PM	TOOL PART #	REV. C
MFG. APPR.	DP	RBE105-31702W19	SHEET 3 OF 10
APPROVED	<i>[Signature]</i>	TITLE MOUNTING TOOL	
DATE 2019-11-20		SCALE NTS	

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D



D



### RBE105-31702W19-5 SHAFT

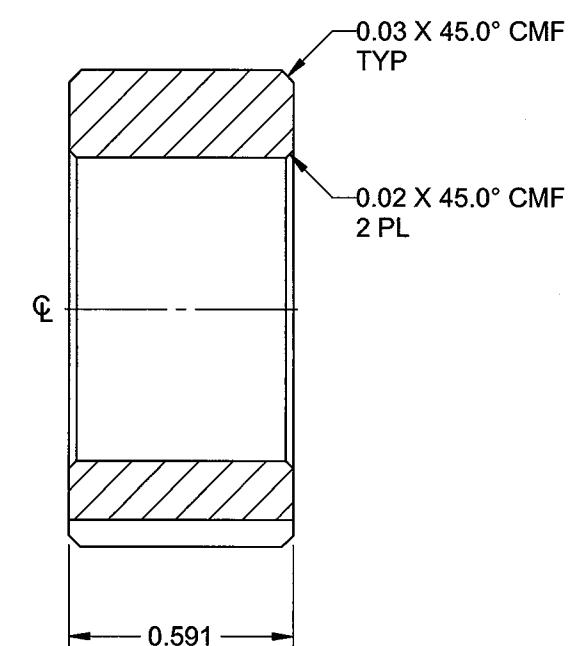
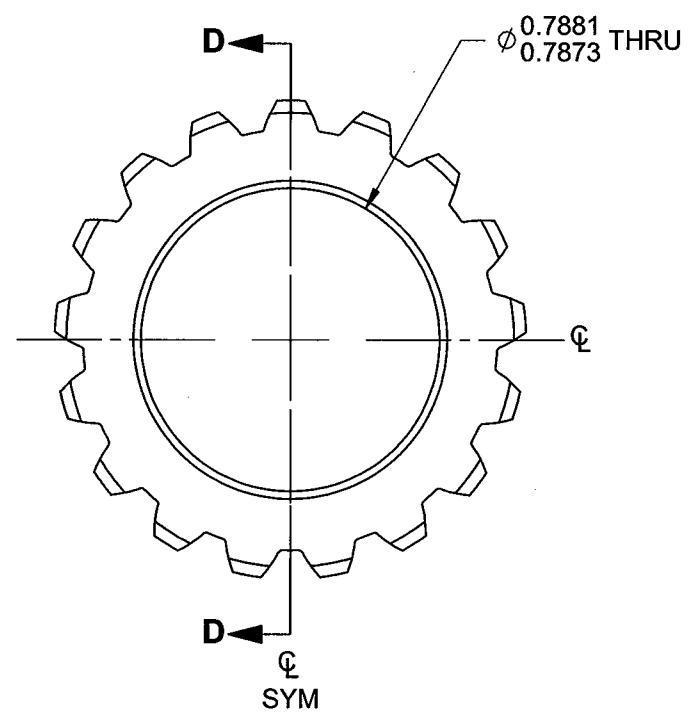
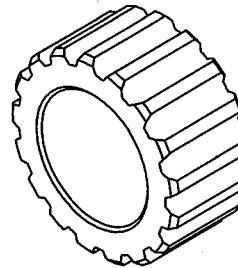
#### NOTES:

- 1) MATERIAL: 4140
- 2) HEAT TREAT: 48-55 RC
- 3) FINISH: BLACK OXIDE PER MIL-C-13924 CLASS 1 THEN APPLY A THIN LAYER OF OIL / CPC PER MIL-PRF-16173 GRADE 3 CLASS 1 OR MIL-C-81309 TYPE III OR MIL-C-23411A OR MIL-PRF-81309 AND WIPE OFF EXCESS
- 4) TOLERANCES: X.X = +/- 0.1" / +/- 1°  
X.XX = +/- 0.01" / +/- 0.5°  
X.XXX = +/- 0.005" / +/- 0.1°  
X.XXXX = +/- 0.0005" / +/- 0.05°  
PARALLELISM, ECCENTRICITY AND SYMMETRY ABOUT ALL CENTER LINES = +/- 0.005"
- 5) UNITS: INCHES UNLESS OTHERWISE NOTED
- 6) REMOVE ALL SHARP EDGES AND BURRS
- 7) IDENTIFICATION: MACHINE ENGRAVE OR DOT MARK P/N, "RBE105-31702W19-3", AS SHOWN
- 8) CENTER DRILL IS ACCEPTABLE

DESIGN	KPT	<b>DART AEROSPACE LTD</b>			
DRAWN	KPT	HAWKESBURY, ONTARIO, CANADA			
CHECKED	PM				
MFG. APPR.	DP				
APPROVED	<i>[Signature]</i>				
TOOL PART #		<b>RBE105-31702W19</b>			
REV. C		SHEET 4 OF 10			
TITLE		SCALE			
MOUNTING TOOL		NTS			
DATE 2019-11-20					
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**SHAFT DIN 5480 - W32 X 1.75 X 17 X 8f**

NUMBER OF TEETH	17
MODULE	1.75
PRESSURE ANGLE	30°
TIP DIAMETER	[31.49-31.65]
ROOT FORM CIRCLE DIAMETER	[28.43] MAX
ROOT DIAMETER	[27.37-28.15]
MAX EFFECTIVE TOOTH THICKNESS	[2.915]
MAX ACTUAL TOOTH THICKNESS	[2.897] REF
MIN ACTUAL TOOTH THICKNESS	[2.865]
MEASURING CIRCLE DIAMETER	[3.500]
MAX DIMENSION OVER MEASURING CIRCLES	[35.382] REF
MIN DIMENSION OVER MEASURING CIRCLES	[35.336]

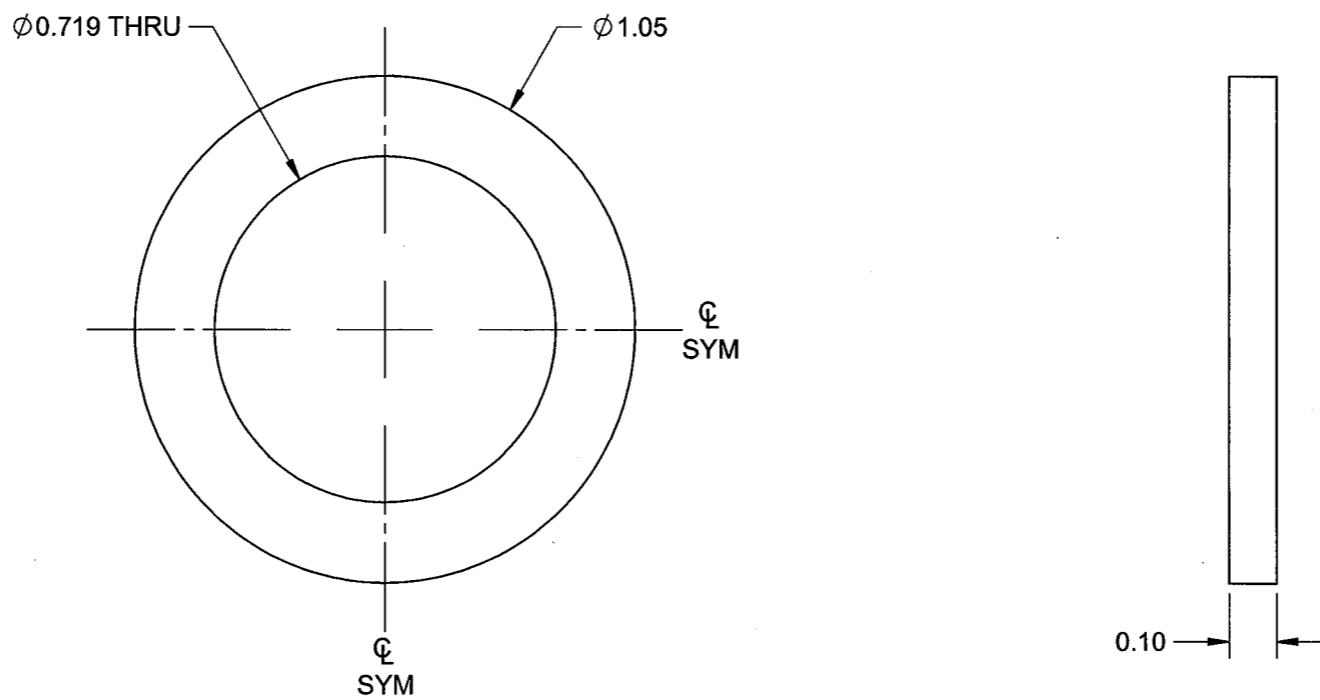
**RBE105-31702W19-7 EXTERNAL GEAR**

8

- 1) MATERIAL: 4140 (28-32 RC)
- 2) HEAT TREAT: N/A
- 3) FINISH: BLACK OXIDE PER MIL-C-13924 CLASS 1 THEN APPLY A THIN LAYER OF OIL / CPC PER MIL-PRF-16173 GRADE 3 CLASS 1 OR MIL-C-81309 TYPE III OR MIL-C-23411A OR MIL-PRF-81309 AND WIPE OFF EXCESS
- 4) TOLERANCES: X.X = +/- 0.1" / +/- 1°  
X.XX = +/- 0.01" / +/- 0.5°  
X.XXX = +/- 0.005" / +/- 0.1°  
X.XXXX = +/- 0.0005" / +/- 0.05°  
PARALLELISM, ECCENTRICITY AND SYMMETRY ABOUT ALL CENTER LINES = +/- 0.005"
- 5) UNITS: INCHES UNLESS OTHERWISE NOTED
- 6) REMOVE ALL SHARP EDGES AND BURRS
- 7) IDENTIFICATION: N/A
- 8) SPLINE MUST SLIDE EASILY ALONG ITEM -1

DESIGN	KPT	<b>DART AEROSPACE LTD</b> HAWKESBURY, ONTARIO, CANADA	
DRAWN	KPT		
CHECKED	PM	TOOL PART #	REV. C
MFG. APPR.	DP	RBE105-31702W19	SHEET 5 OF 10
APPROVED	<i>WP</i>	TITLE MOUNTING TOOL	
DATE 2019-11-20		SCALE NTS	

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D

C

B

D

C

B

**RBE105-31702W19-9 WASHER**

8

**NOTES:**

- 1) MATERIAL: 4140 (28-32 RC)
- 2) HEAT TREAT: N/A
- 3) FINISH: ZINC PLATE (YELLOW OR BLACK) PER ASTM B633 TYPE 2 CLASS 2
- 4) TOLERANCES: X.X =  $+\/- 0.1"$  /  $+\/- 1^\circ$   
 $X.XX = +/-.01"$  /  $+\/- 0.5^\circ$   
 $X.XXX = +/-.005"$  /  $+\/- 0.1^\circ$   
 $X.XXXX = +/-.0005"$  /  $+\/- 0.05^\circ$
- 5) UNITS: INCHES UNLESS OTHERWISE NOTED
- 6) REMOVE ALL SHARP EDGES AND BURRS
- 7) IDENTIFICATION: N/A
- 8) DIMENSIONS MUST BE MET AFTER PLATING

DESIGN	KPT	<b>DART AEROSPACE LTD</b>	
DRAWN	KPT	HAWKESBURY, ONTARIO, CANADA	
CHECKED	PM	TOOL PART #	
MFG. APPR.	DP	REV. C	
APPROVED	<i>W.P.</i>	RBE105-31702W19	
DATE 2019-11-20		SHEET 6 OF 10	
TITLE MOUNTING TOOL		SCALE	NTS
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D

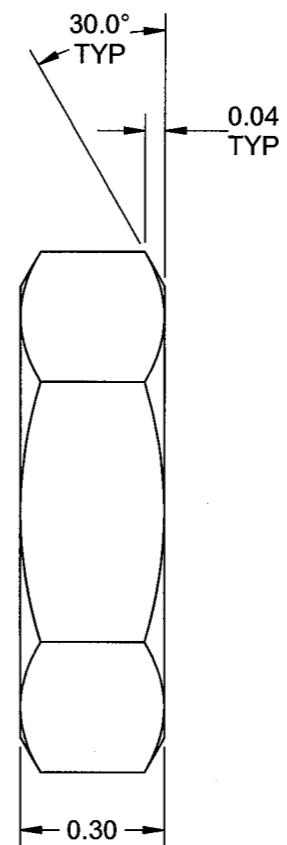
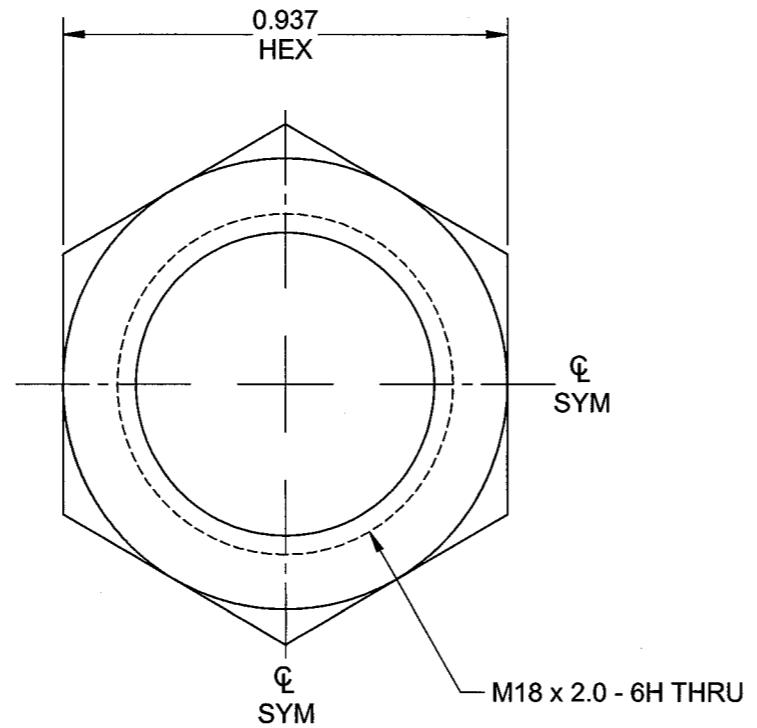
D

C

C

B

B

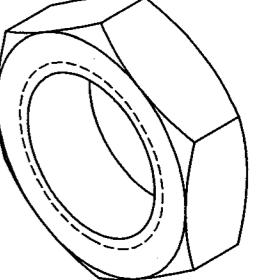


### RBE105-31702W19-11 NUT

#### NOTES:

- 1) MATERIAL: 4140 (28-32 RC)
- 2) HEAT TREAT: N/A
- 3) FINISH: BLACK OXIDE PER MIL-C-13924 CLASS 1 THEN APPLY A THIN LAYER OF OIL / CPC PER MIL-PRF-16173 GRADE 3 CLASS 1 OR MIL-C-81309 TYPE III OR MIL-C-23411A OR MIL-PRF-81309 AND WIPE OFF EXCESS
- 4) TOLERANCES: X.X =  $+\/- 0.1"$  /  $+\/- 1^{\circ}$   
 X.XX =  $+\/- 0.01"$  /  $+\/- 0.5^{\circ}$   
 X.XXX =  $+\/- 0.005"$  /  $+\/- 0.1^{\circ}$   
 X.XXXX =  $+\/- 0.0005"$  /  $+\/- 0.05^{\circ}$   
 PARALLELISM, ECCENTRICITY AND SYMMETRY ABOUT ALL CENTER LINES =  $+\/- 0.005"$
- 5) UNITS: INCHES UNLESS OTHERWISE NOTED
- 6) REMOVE ALL SHARP EDGES AND BURRS
- 7) IDENTIFICATION: N/A

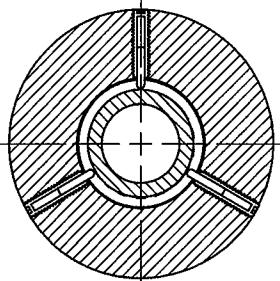
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DRAWN	KPT	HAWKESBURY, ONTARIO, CANADA	
CHECKED	PM		
MFG. APPR.	DP		
APPROVED	<i>WJ</i>		
TOOL PART #	<b>RBE105-31702W19</b>		REV. C
			SHEET 7 OF 10
TITLE	<b>MOUNTING TOOL</b>		SCALE
			NTS
DATE	2019-11-20		COPYRIGHT © 2019 BY DART AEROSPACE LTD
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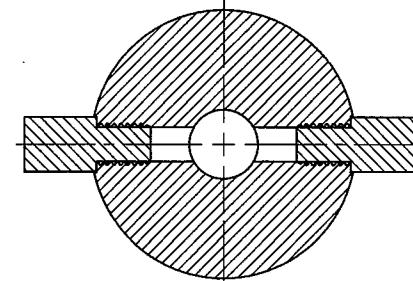
ITEM #	QTY	PART #	PART TITLE
-15	1	RBE105-31702W19-15	HANDLE COLLET
-17	1	RBE105-31702W19-17	HANDLE BASE
18	2	McMaster#6303K57 OR EQUIV.	BLACK OXIDE STEEL LEVER HANDLE 3/8"-16 X 4" LG.
19	3	McMaster#8495A37 OR EQUIV.	BLACK OXIDE STEEL LONG-NOSE SPRING PLUNGER #8-32 X 5/8" BODY LG.

D

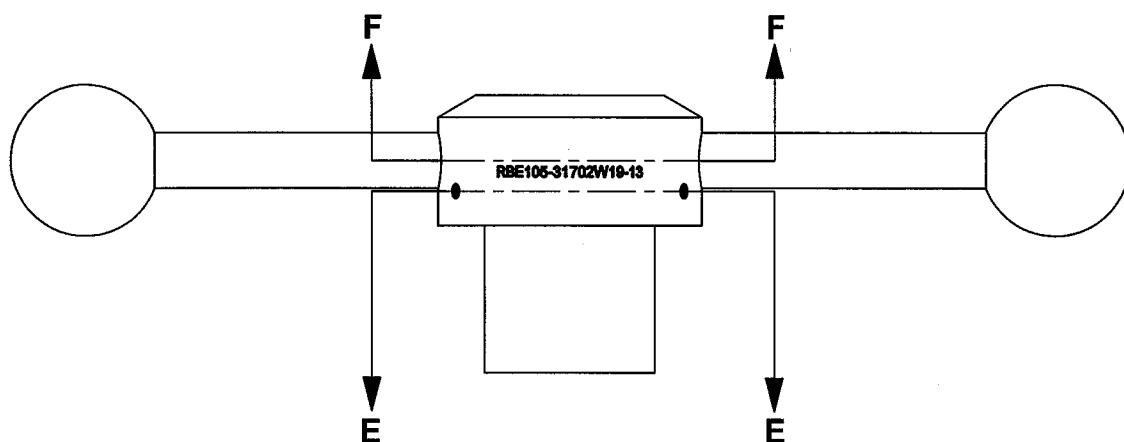
D



SECTION E-E



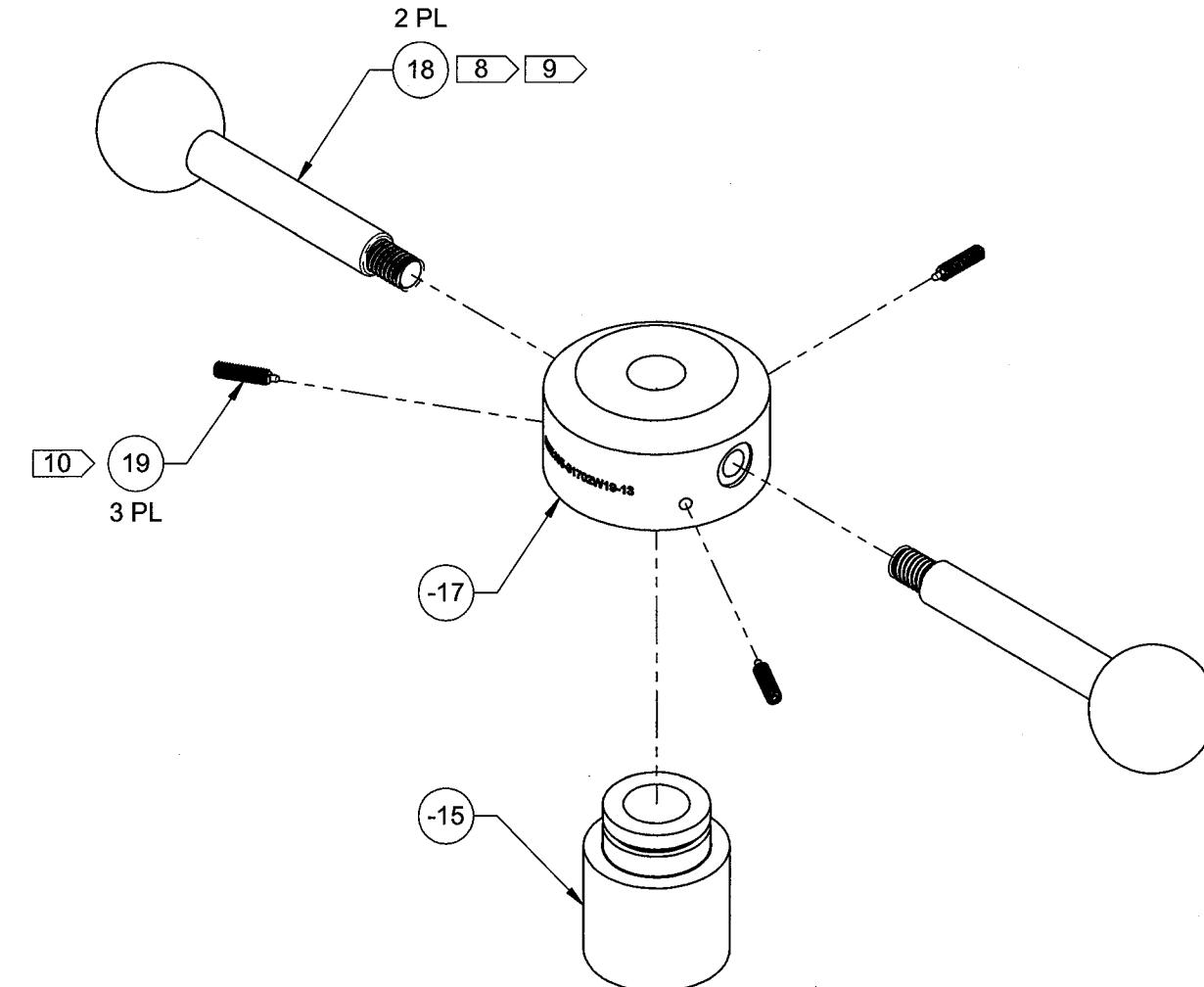
SECTION F-F



RBE105-31702W19-13 HANDLE ASSEMBLY

## NOTES:

- 1) MATERIAL: N/A
- 2) HEAT TREAT: N/A
- 3) FINISH: N/A
- 4) TOLERANCES: X.X = +/- 0.1" / +/- 1°  
 X.XX = +/- 0.01" / +/- 0.5°  
 X.XXX = +/- 0.005" / +/- 0.1°  
 X.XXXX = +/- 0.0005" / +/- 0.05°  
 PARALLELISM, ECCENTRICITY AND SYMMETRY ABOUT ALL CENTER LINES = +/- 0.005"
- 5) UNITS: INCHES UNLESS OTHERWISE NOTED
- 6) IDENTIFICATION: N/A
- 7) ASSEMBLE AS SHOWN
- 8) APPLY RED THREADLOCKER LOCTITE 263/262 ON THREADS OF ITEM 18 THEN ASSEMBLE WITH ITEM -17, AND REMOVE EXCESS
- 9) INSTALL ITEM 18 HAND TIGHT
- 10) WHEN INSTALLING ITEM 19, ITEM -15 MUST ROTATE FREELY AROUND ITEM -17

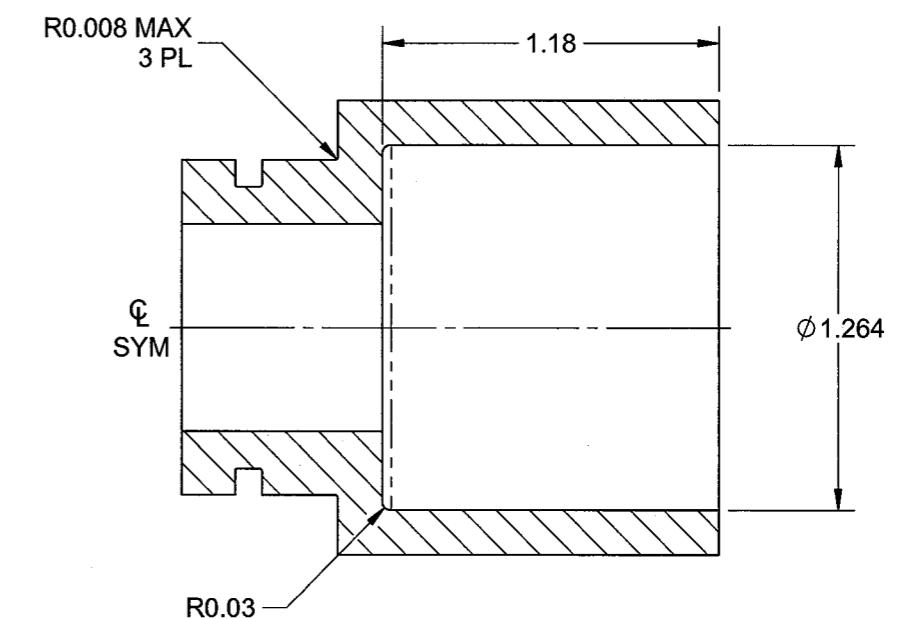
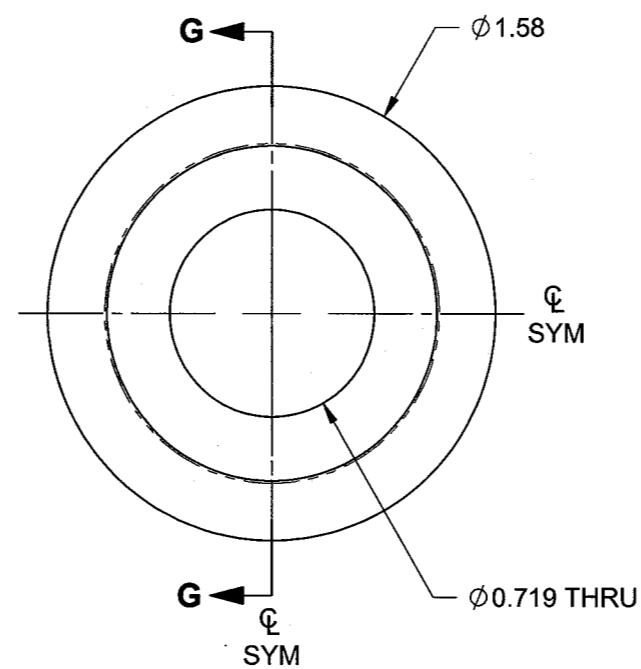
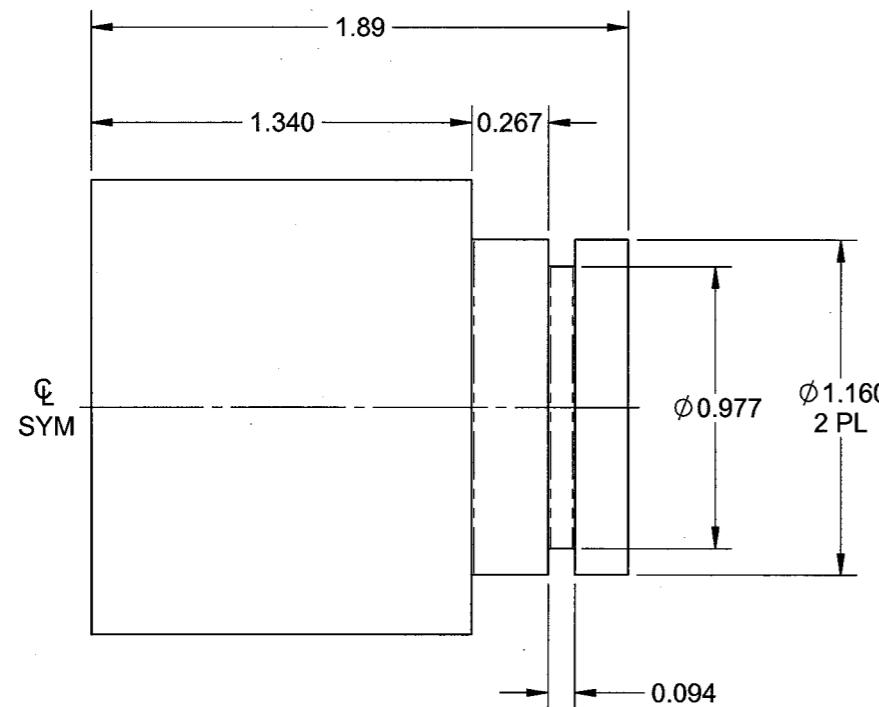


DESIGN	KPT	DART AEROSPACE LTD	
DRAWN	KPT	HAWKESBURY, ONTARIO, CANADA	
CHECKED	PM	REV. C	
MFG. APPR.	DP	TOOL PART #	
APPROVED	<i>W</i>	RBE105-31702W19	
DATE 2019-11-20		SHEET 8 OF 10	
TITLE MOUNTING TOOL		SCALE	NTS

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### SECTION G-G

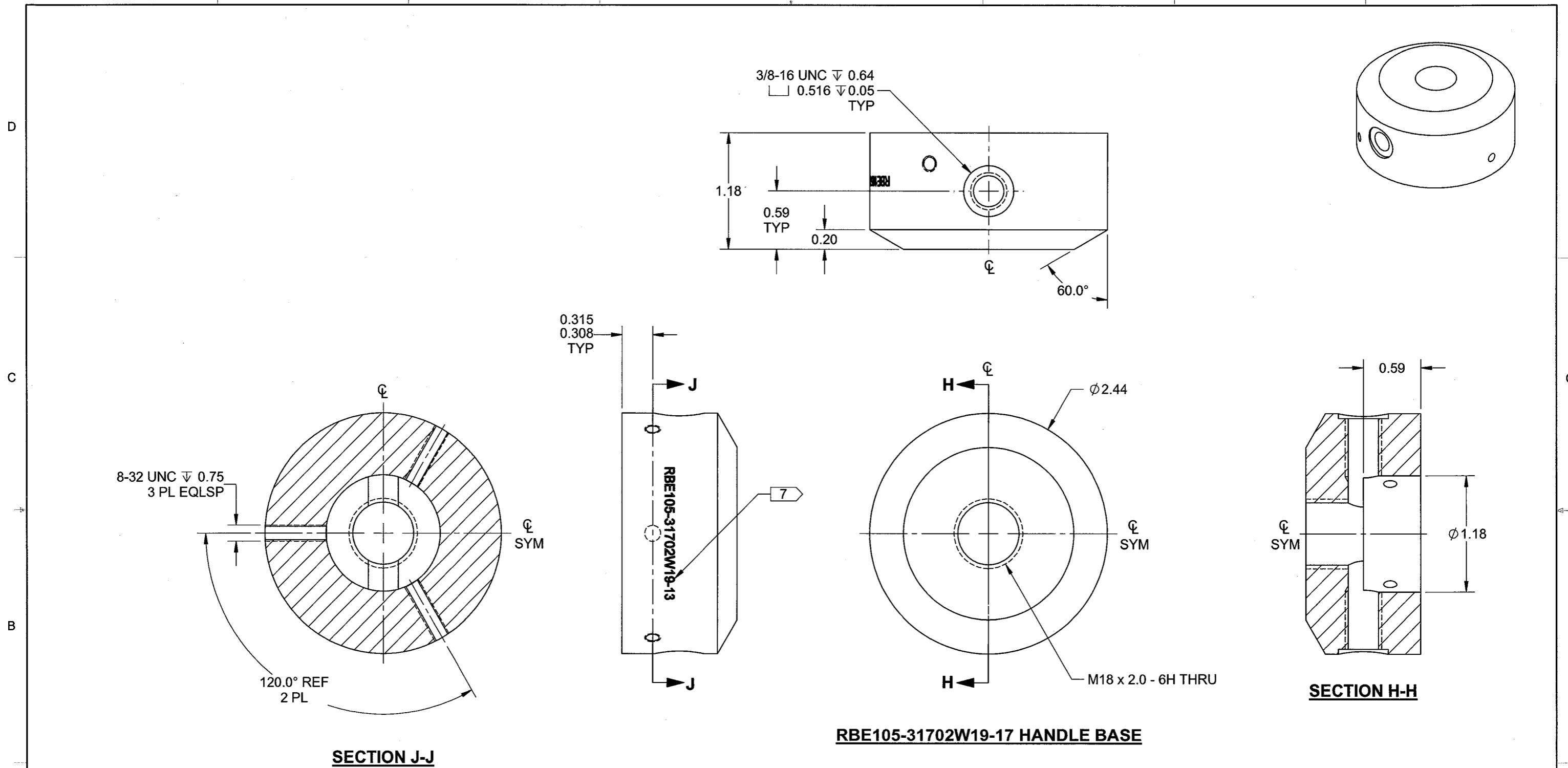
### RBE105-31702W19-15 HANDLE COLLET

8

#### NOTES:

- 1) MATERIAL: 1144 STRESSPROOF
- 2) HEAT TREAT: N/A
- 3) FINISH: ZINC PLATE (YELLOW OR BLACK) PER ASTM B633 TYPE 2 CLASS 2
- 4) TOLERANCES: X.X = +/- 0.1" / +/- 1°  
X.XX = +/- 0.01" / +/- 0.5°  
X.XXX = +/- 0.005" / +/- 0.1°  
X.XXXX = +/- 0.0005" / +/- 0.05°
- 5) PARALLELISM, ECCENTRICITY AND SYMMETRY ABOUT ALL CENTER LINES = +/-0.005"
- 6) UNITS: INCHES UNLESS OTHERWISE NOTED
- 7) REMOVE ALL SHARP EDGES AND BURRS
- 8) IDENTIFICATION: N/A
- 9) DIMENSIONS MUST BE MET AFTER PLATING

DESIGN DRAWN	KPT	<b>DART AEROSPACE LTD</b>	
CHECKED	PM	HAWKESBURY, ONTARIO, CANADA	
MFG. APPR.	DP	REV. C	
APPROVED	<i>[Signature]</i>	TOOL PART # RBE105-31702W19	
DATE 2019-11-20		SHEET 9 OF 10	
TITLE MOUNTING TOOL		SCALE	NTS
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## NOTES:

1) MATERIAL: 4140 (28-32 RC)  
 2) HEAT TREAT: N/A  
 3) FINISH: BLACK OXIDE PER MIL-C-13924 CLASS 1 THEN APPLY A THIN LAYER OF OIL / CPC PER MIL-PRF-16173 GRADE 3 CLASS 1 OR MIL-C-81309 TYPE III OR MIL-C-23411A OR MIL-PRF-81309 AND WIPE OFF EXCESS

4) TOLERANCES: X.X = +/- 0.1" / +/- 1°  
 X.XX = +/- 0.01" / +/- 0.5°  
 X.XXX = +/- 0.005" / +/- 0.1°  
 X.XXXX = +/- 0.0005" / +/- 0.05°

PARALLELISM, ECCENTRICITY AND SYMMETRY ABOUT ALL CENTER LINES = +/-0.005"  
 5) UNITS: INCHES UNLESS OTHERWISE NOTED  
 6) REMOVE ALL SHARP EDGES AND BURRS  
 7) IDENTIFICATION: MACHINE ENGRAVE OR DOT MARK P/N, "RBE105-31702W19-13", AS SHOWN

DESIGN	KPT	<b>DART AEROSPACE LTD</b>	
DRAWN	KPT	HAWKSLEY, ONTARIO, CANADA	
CHECKED	PM		
MFG. APPR.	DP		
APPROVED		<i>[Signature]</i>	
DATE	2019-11-20	TOOL PART #	<b>RBE105-31702W19</b>
		REV. C	
		SHEET 10 OF 10	
		TITLE	<b>MOUNTING TOOL</b>
		SCALE	NTS
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